## Remarks

Entry of the amendments, reconsideration of the application, and allowance of all pending claims are respectfully requested. Claims 11-20 are added hereinabove, and claims 1-10 are canceled without prejudice. Therefore, claims 11-20 remain in this case.

New claims 11-20 are added to more particularly point out and distinctly claim certain features of Applicants' invention. These amendments to the claims constitute a bona fide attempt by the Applicants to advance prosecution of this application and obtain allowance of certain claims and are in no way meant to acquiesce to the substance of the outstanding Office Action. No new matter is added to the application by any amendment presented.

More particularly, independent claim 11 includes features of Applicants' invention previously recited in claims 1 and 2, which are now canceled without prejudice. In addition, the recitation of new claim 11 includes storing a current actual value, a current stride, and a stride history pattern in a first table. Support for this aspect of the invention is provided in paragraphs [0043] and [0045]- [0047], for example. New claim 12 includes subject matter from canceled claim 2. New claim 13 includes subject matter from canceled claim 2 and amends the recitation of computing a predicted value to comprise "adding the current actual value and the stride from the selecting." Support for this amended recitation of computing a predicted value is provided by paragraph [0048], for example. New claim 14 includes subject matter previously recited in canceled claim 3. In addition, the recitation of new claim 14 is supported by paragraphs [0031]- [0032], [0048], [0051]- [0052], [0058]- [0059], and [0067], for example. New claim 15 includes aspects of the present invention previously recited in canceled claims 4 and 5. The recitation of independent claim 16 includes subject matter previously recited in canceled claim 6. Support for each entry of a first table additionally comprising "a current actual value" is provided clearly by FIG. 4 and paragraph [0045], for example. New claim 17 clarifies the recitation of canceled claim 7 and depends from new claim 16. Claims 8, 9, and 10 have been renumbered as new claims 18, 19, and 20 with appropriate amendment of their dependencies in accordance with the requirements of 35 U.S.C. §112, paragraph four.

Objections to the Drawings

The Office Action objected to the drawings for failing to comply with 37 CFR §1.84(p)(5), in that reference 680 is not mentioned in the detailed description. In response, Applicants have amended the specification at paragraph 0076, page 20, to include a reference to "step 680", mistakenly referred to as "step 660".

Objections to Specification

The Office Action objected to the title of the invention as not descriptive. In response, Applicants have amended the title as suggested by the Office Action.

The Office Action objected to the abstract of the invention, citing to MPEP §608.01(b). In response, Applicants have amended the abstract to correct the informalities pointed out by the Office action.

The Office Action objected to the disclosure of the invention due to various informalities, including typographical and grammatical errors. In response, Applicants have amended the disclosure to correct for typographical and grammatical errors.

35 U.S.C. §112 Rejection

The Office Action rejected claims 2-10 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Office Action alleges insufficient antecedent basis for various limitations throughout the dependent claims.

In response, Applicants have canceled claims 2-10 and added new claims 12-20. Applicants respectfully submit that new claims 12-20 have proper antecedent basis and, therefore, are in proper form.

35 U.S.C. §102(b) Rejection

The Office Action rejected claim 1 under 35 U.S.C. §102(b), as anticipated by Wang et al. ("Highly Accurate Data Value Prediction Using Hybrid Predictors", IEEE, 1997; hereinafter, "Wang"). Applicants respectfully, but most strenuously, traverse this rejection because the cited patent does not teach or suggest all of the elements of applicants' claimed invention and, therefore, does not anticipate applicants' invention.

One aspect of Applicants' invention, as recited in new claim 11, is a "hybrid prediction method usable in parallel computing processors for predicting a value to be produced by an anticipated execution of an instruction." As discussed hereinabove, claim 11 includes features of Applicants' invention previously recited in canceled claim 1 so the following remarks are directed to the patentability of new claim 11 with respect to Wang. As recited in claim 11, the method includes "storing, in a first table, a current actual value ..., a current stride ..., and a stride history pattern for the instruction" in a first table. The stride history pattern represents a pattern of strides that results from prior executions of the instruction, and the strides in this pattern of strides are stored in a stride field of the first table. The method also includes selecting a stride from the stride field of the first table and computing a predicted value for the anticipated execution of the instruction, using the stride from the selecting and the current actual value.

Applicants respectfully submit that Wang fails to teach or suggest multiple features recited in claim 11. For example, Wang does not teach or suggest storing a stride history pattern for the instruction. Instead, sections 3.3 and 5.2 and Figures 4 and 6 of Wang describe storing the value history pattern resulting from past executions of an instruction. Also, Wang does not teach or suggest storing the strides represented in the stride history pattern in a stride field of a table, wherein the stride field may store multiple strides that resulted from prior executions of the instruction. In contrast, Wang describes storing only one stride; and this one stride is used for stride-based prediction in Wang. Sections 3.3 and 5.2 and Figures 4 and 6 of Wang clearly describe storing multiple data values produced by past executions of an instruction. The values represented in the value history pattern and stored in the data value field in Wang are results produced by past executions of an instruction. However, these values are not strides, which

reflect differences in values produced by the execution of two instances of an instruction. Moreover, Wang does not teach or suggest computing a predicted value for the value to be produced by the anticipated execution of the instruction based on a stride history pattern. Wang's description is limited to last-value prediction, stride-based prediction using single stored stride and a last value, two-level value-history-pattern-based prediction, and hybrids of these types. There is no mention of value prediction based on a stride history pattern in Wang.

Therefore, applicants respectfully submit that applicants' claimed invention, as recited in claim 11, is not anticipated by (nor rendered obvious over) Wang, and allowance thereof is respectfully requested.

35 U.S.C. §103(a) Rejection

The Office Action rejected original claims 2-10 under 35 U.S.C. §103(a), as unpatentable over Wang in view of Nakra et al. ("Global Context-Based Value Prediction", IEEE, 1999; hereinafter, "Nakra"). Applicants respectfully, but most strenuously, traverse this rejection to any extent deemed applicable to claims 12-20 presented herein for the reasons stated below.

As discussed hereinabove, claim 12 includes features of Applicants' invention previously recited in canceled claim 2 so the following remarks are directed to the patentability of new claim 12 with respect to Wang in view of Nakra. Since claim 12 depends from claim 11, Applicants respectfully submit that claim 12 is patentable over Wang in view of Nakra because claim 11 is not rendered obvious by the cited art and for the further features recited in claim 12.

Wang and Nakra, either alone or in combination, do not teach or suggest multiple features of Applicants' invention recited in claim 11. For example, on pages 12-13 of the Office Action, the Examiner states that Wang does not describe a stride history pattern field, counters associated with stride fields, and a stride pattern history table that is addressable with the stride history pattern and updated according to the stride history pattern. The Office Action alleges, in essence, that one of ordinary skill in the art would be motivated by Nakra to modify the structure of Figure 6 in Wang as follows: store strides in the multiple data value fields of Wang's structure; and store a stride history pattern in the value history pattern field of Wang's structure so that the counters in Wang's pattern history table are associated with strides in the stride

history pattern. However, Applicants' respectfully submit that the proposed modification of Wang does not yield the present invention because the proposed structure would be inoperable to produce a predicted value to be produced by an anticipated execution of an instruction in accordance with last value prediction, stride-based value prediction or stride-history-pattern-based prediction. The reason is that the proposed modification of Wang results in one of the stride values stored in the data value fields being added to another stride stored in the stride field. In contrast, claim 11 recites computing a predicted value using a selected stride and the current actual value, which resulted from a most-recent execution of the instruction. Therefore, Applicants respectfully submit that the proposed modification of Wang in view of Nakra fails teach or suggest all of the elements of claim 11. Consequently, the modification of Wang in view of Nakra also does not render claim 12 obvious.

Moreover, Applicants respectfully submit that one of ordinary skill in the art would not be motivated by Nakra to make the proposed modification of Wang because the concluding statement in the paragraph cited in the Office Action as providing the motivation actually teaches away from the proposed modification. The last sentence of this paragraph appears at the top of col. 1 on page 2 of Nakra. In particular, Nakra states there that finite context method predictors, which utilize observed patterns of values, and hybrid predictors which employ context method prediction do not have efficient implementations due to their complexities. In fact, this paragraph specifically cites the hybrid predictor described in Wang. In light of these statements, Applicants respectfully submit that one of ordinary skill in the art would not be motivated by Nakra to make the proposed modification of Wang.

For all of the reasons stated above, Applicants respectfully submit that claim 12 is patentable over Wang in view of Nakra and that claims 13-20 are patentable for the same reasons as well as for their own additional recitations.

## Conclusion

In view of the above, Applicants respectfully request allowance of pending claims 11-20.

Should the Examiner wish to discuss this case with Applicants' attorney, the Examiner is invited to contact Applicants' attorney at the number listed below.

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